MENU

ISOTRACK H SERIES

PROTECT – BE SAFE

USER MANUAL

ISOKON
INNOVATIVE PLASTICS SOLUTIONS

MENU

Isotrack H is manufactured by:

ISOKON d.o.o.
Industrijska cesta 16
SI-3210 Slovenske Konjice
SLOVENIJA

www.isotrack.eu

CONTENTS

IMPORTANT NOTICE

This manual provides best practice guidance to help those involved in handling and installing Isotrack H mats for temporary roadway and ground protection purposes.

Health and Safety should always be top priority. Therefore, this user and guidance document should be read in conjunction with Health and Safety project site requirements.

Please also refer to Isokon's Standard Terms & Conditions and Warranty.

1. ISOTRACK H - INTRODUCTION

The Isotrack H Composite Mat System provides a safe, cost-effective temporary road and ground protection surface for heavy duty applications. The mats are made of thermoplastic material for a strong, durable, working surface that can be used for projects that require safe temporary access for heavy vehicles, operating equipment and site personnel over soft or sensitive ground.

The mats are easy to handle and install as tracks, roadways, working pad and parking areas using a simple connection system. The surface tread patterns provide non-slip traction for vehicles, work crews and pedestrians. Subject to recommended use and maintenance the mats will provide long life performance.

The mats can be used on a wide range of project types:

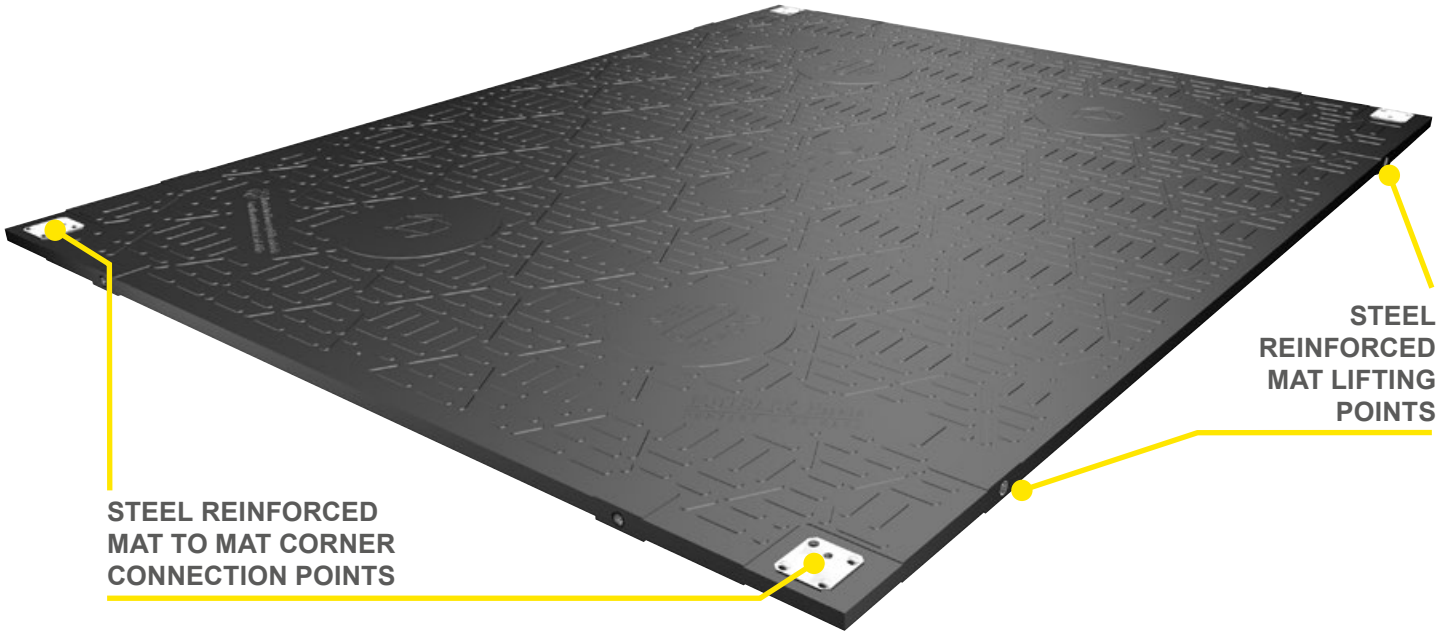
- Construction and civil engineering
- Utilities
- Oil and gas
- Mining
- Transmission
- Drilling contractors
- Events
- Temporary road and work areas
- Emergency access
- Hard and soft landscaping work
- Sports Facilities and Recreational Grounds
- Heritage and Environmental sites
- Any project requiring safe temporary access for vehicles and equipment

Isotrack H is the registered trademark of **Isokon d.o.o.**

2. ISOTRACK H – KEY FEATURES

2.1 Key Features

The Isotrack H mat is 3.0m x 2.5m x 40mm thick (refer Appendix 1) and weighs approximately 290kg



IsoTraction Surface for Rubber Tyre Vehicles

Surface for Steel Tracked Vehicles

- Two surface traction designs – one for steel tracked vehicles and one (IsoTraction) for rubber-tyred vehicles.
- IsoTraction® surface design is based on major tyre manufacturer traction research and has been independently tested to demonstrate superior grip for vehicles compared to other mats.
- Choice of connection options depending on ground conditions and type of project.
- Steel reinforced mat lifting points on 2.5m and 3m sides.
- A number of raised nubs on tyre surface that interlock with the steel traction surface to help prevent mats sliding over each other during transport.
- One piece compression moulded high performance recycled thermoplastic material resistant to chemicals and oil, UV protected and will not rot.
- Can be connected in different configurations to make roadways, pads, turning areas or passing places.
- High performance over a wide temperature range and operating conditions.
- Material is chemically inert and will not rot.
- Batch marking – quality control.
- RFID option - asset manager
- Option for customer logo marking.
- Colour options – natural virgin colour for hot climates and grass protection.

2.2 Isotrack H Benefits

Isotrack H provides many user benefits:

- Support vehicle and equipment weights up to 150 tonnes (subject to ground conditions).
- Easy and quick to unload using lifting equipment or forklifts.
- Fast and easy to install using a choice of connection options.
- Mats gently flex with ground contours – no ground preparation.
- Can be used on a wide range of different ground conditions and soil types to prevent vehicles and site personnel getting bogged down
- Safe movement and access for vehicles, equipment and people.
- Prevent severe rutting and damage – avoid ground reinstatement cost.
- Keep your project running to avoid delays and down time costs.
- Flexible but tough and durable mat for long life use.
- Cannot puncture and take on water or contaminants.
- Easy to clean after use.
- Low theft risk compared to aluminium and steel mats.
- Sustainable – made from recycled material that is 100% recyclable at end of life.

3. ENVIRONMENTAL AND CORPORATE SUTAINBILITY

Isotrack H can be used to help protect the environment and also support corporate sustainability objectives:

- Protecting the environment – the mats help to reduce ground damage and protect habitats.
- Supporting Health & Safety through safer movement of vehicles, equipment and project workers.
- Contribute to accident rate reduction and lost time incidents.
- The materials used to make Isotrack H are 100% recyclable at end of life.

4. TRANSPORT, HANDLING, STORAGE, CLEANING & MAINTENANCE

At depots and on site it is essential that:

1. Personnel involved in the transport, handling, installation, storage, cleaning and maintenance of Isotrack H should wear appropriate Personal Protective Equipment.
2. All Health and Safety requirements are complied with.

4.1 Transport

Isotrack H leaves the factory for delivery strapped on pallets of 5 mats (gross weight including pallet = 1525kg). The mats can be un-strapped at a depot or on site before first use.

- It is good practice to ensure that mats are carefully stacked and aligned for transport.
- The mats must be safely loaded / unloaded using appropriate equipment (e.g. forklift, crane) of the required lifting and load capacity. As a general guide it is recommended that a maximum of one pallet of 5 strapped mats or 1 unstrapped mat is lifted at a time.
- Use appropriate straps or other fixing methods to safely secure the mats during lifting and transport.
- Ensure compliance with international, national and regional road directives and regulations (in particular maximum authorized dimensions and weights).

4.2 Lifting and Handling

New mats are delivered on pallets from the factory – 5 mats securely strapped to each pallet. The straps can be removed after unloading at a depot or just before first use on site. The pallets, strapping and any other packaging should be disposed of responsibly.

The mats should be loaded / unloaded by fully trained personnel using the appropriate equipment for safe lifting and moving of the mats.

On site and in preparation for installation mats can be removed from unwrapped pallets or from the back of a truck using suitable equipment e.g. tele-handlers / other equipment with extended forks (minimum 1.8m in length), lifting chains, fork lifts, grab equipment. Mats can be transported directly to place of installation.

4.3 Storage and Stacking

- Mats can be stored on pallets as delivered until used.
- Mats can be stockpiled without pallets after use – in the depot or safely secured on trucks used to transport the mats to site. It is recommended that mats should be stored in packs of five. The bottom mat can be placed on wooden posts of sufficient height to position forks under the stack for lifting. Packs of mats should be separated using minimum of three 100 x 100mm timbers spanning the full width of the mats. This will ensure access to the stack using forks or other lifting equipment.

- When storing the mats, care should be taken to ensure that the ground is level and stable within the storage areas. Clear any obvious obstructions from the surface before stacking the mats.
- The number of pallets or individual mats that can be safely stacked on top of each other will depend on the size of the storage area, site safety requirements and the equipment available for lifting and moving the mats.

Should after a prolonged period of use on a site with undulating ground the mats show slight deformation / conformance to any ground irregularities they should be stored upside down on a flat surface at the end of the job – due to the material properties the mats will return to their original flat shape (this will happen faster in warmer conditions).

4.4 Cleaning

Isotrack H mats are constructed from a thermoplastic material which does not absorb any contaminants into its structure and provides a barrier between the ground and mat surface.

1. It may sometimes be necessary to clean mats on site – before being re-used elsewhere on the same project or before loading for return to depot. This can be undertaken using water hoses, pressure washers or brush cleaning equipment.
2. Oil, fuel or other contaminants should be removed, contained and isolated for safe disposal in full compliance with statutory and site specific pollution prevention and waste management plans.

Back at the depot and in preparation for the next project:

1. The mats can be steam or pressure washed to remove dirt and mud and to restore optimal traction.
2. Any residual oil, fuel or other contaminants should be contained and isolated for safe disposal in accordance with statutory and site specific pollution prevention and waste management plans.

4.5 Removing Snow and Ice

In cold climatic regions the mat surfaces may sometimes require removal of snow or ice. The composite material used to make the mats can be damaged by steel equipment so where possible removal should be undertaken by sweeping using vehicles with stiff brush attachments. If absolutely necessary, vehicles with snow shovel or plough equipment can be used although extreme care must be taken to avoid damage to the mat surfaces and the heads of connection bolts. Risk of damage will be greater if mats are unevenly installed or not properly connected.

The mats will not be damaged by using salt or sand so can be safely used to prevent slip risk from ice, snow, vehicle oils etc. However, as always, such use must comply with statutory and site specific pollution prevention requirements.

4.6 Maintenance

The Isotrack H mat is designed to be relatively maintenance free. However, if mats are mishandled or used in ways for which they were not designed then they can get damaged. Periodic inspections on site and / or in the depot should be undertaken by a competent person to look for:

- Cracks within the mat surface. If it is only a minor crack then the mat may be able to continue to be used. If a large crack, multiple cracks or breaks occur then it is advisable to replace the mat as soon as possible.
- Missing connection bolts or parts - the bolts are part of the standard connection system and are designed securely hold adjacent mats together. Continued use with missing bolts could adversely affect mat performance. Missing bolts (or other connectors) should be replaced as soon as possible.
- Damage to corner connection parts – severely damaged corner connection plates that could prevent safe connection should be replaced with new parts (contact Isokon for supply of parts).
- Missing or damaged edge connector ferrules should be replaced (contact Isokon for supply of parts).
- Loose connection – if it is obvious that a connection bolts is working loose then it should be tightened (refer Section 6.3).
- On site check for signs of mats trying to push up against each other due to expansion of the thermoplastic mat material (this is a normal thermal property of the material). Connection bolts should be loosened to allow movement within the elongated slot of the connector strap. This should allow mats to level out – then the connection bolts can be re-fastened.

  It is important to be aware of this, particularly if large temperature changes are expected during the period of use. If mats are installed during the night or early hours of the morning when conditions are cold then they will expand (length and width) when the ambient temperature increases. This effect is more significant when mats receive direct sunlight (particularly black mats that absorb solar radiation and heat up more than the ambient temperature). The ‘bowing’ effect is also more likely to occur if mats are connected without an adequate gap between them (refer Section 6.3. SITE ANALYSIS AND PREPARATION).

Large boulders or other obstructions should be cleared away.

5. SITE ANALYSIS AND PREPARATION

It is expected that Isotrack H will be used only where it is able to safely meet site and project conditions as understood by project site managers and their geo-technical engineers. The contractor or site project manager is responsible for understanding all site conditions and risks including location and depth of any underground utilities (particularly important if using U-pin connectors).

Careful consideration needs to be given to:

- Current and expected ground conditions along the routes and areas where Isotrack H is to be used including ground bearing capacity. Ground conditions and bearing capacity can significantly change, for example, in response to periods of rainfall and flooding.
- Site survey along the routes and areas where Isotrack H is to be used. This is to identify where boulders, shrubs, tree routes, stumps or other obstructions may need to be cleared or managed ahead of mat installation.
- The duration of the project and the types, sizes and weights of vehicles and equipment to be used.
- For large projects it is good practice to use scaled site drawings to show the alignments and numbers of mats required to complete the temporary road and pad areas required.
- The duration of the project and the types, sizes and weights of vehicles and equipment to be used.
- **Isotrack H** mats are flexible allowing them to contour to an undulating ground surface - small ground irregularities will not adversely impact on mat performance. However, it is important to note that the mats are not designed to be used for bridging over ditches or trenches - some grading or infilling of the ground surface prior to installation may be required.

6. DEPLOYMENT AND INSTALLATION

6.1 Lifting Equipment

Pallets of mats can be handled on site using different types of equipment as long as they are fit for purpose and meet site health and safety requirements. Typically, pallets of mats are lifted from trucks and / or taken to the installation area using equipment fitted with forks, but mats can also be lifted and handled using chains and eye bolts. Refer Section 4.2.

- Pallets of mats should only be handled by adequately trained and experienced operators.
- Pallets should be picked up by forks on the long side.

6.2 Installation Tools

The M16 bolts supplied with the connectors can be tightened using a standard combination / socket / ring spanner or power tool.

6.3 Connection

For safe installation some form of connection, fastening or pinning of the mats is ALWAYS required. For road / tracks each mat needs a **minimum of two connectors**. Using connectors will help prevent mat spin or unwanted mat movement during us. Each standard Isotrack H mat has 10 connection holes (4 x corner and 6 x edge) providing options for installation configuration (refer Appendix 2).

Corner Connection

There is a zinc plated steel reinforced connection point at each corner. This comprises two plates bolted together through the mat core. One of the plates has a welded boss into which an M16 bolt can be fastened. The connection process is summarized below.
Note: it is recommenced that a gap of 10mm is left between mats to allow for slight mat expansion that can result from increased temperature after connection - refer to Section 4.6.

1. Adjacent mats installed ready for connection.

2. The metal connection strap is placed over the corner connection holes

3. The first bolt is inserted and tightened by hand
4. A hand power tool with socket can be used to tighten the bolt with washer

5. The second bolt with washer is inserted through the connector strap and the bolt tightened by hand

6. The second bolt is finally tightened.
Note – the elongated slot allows for adjustment for mat size expansion or contraction due to extreme temperature changes. The bolt can be slackened off to allow for adjustment.

7. Connection completed

Edge Connection

In addition to the corner connection points there are four zinc plated M16 edge connection points – two positioned along each 3m side and one along 2,5m side of the mat.

These provide additional connection points to help ensure a more even road surface on uneven ground (prevents or reduces vertical displacement between adjacent mats – also reduces risk of trip hazard).

The steel connector strap is aligned over the connection points

Bolts are inserted and tightened as described above for Corner Connection

6.4 Installation and Connection Process

Installation

Experienced operators involved in the installation of heavy duty temporary road mats will have their preferred methods of handling and installing mats.

- A minimum crew of two is recommended for installation – to transport mats to the installation area and then to position them for connection.
- For increased efficiency and speed for large projects, or where ground conditions are more difficult, increased crew sizes can be used.
- On soft or waterlogged ground the equipment and crew should work from on top of the mats.

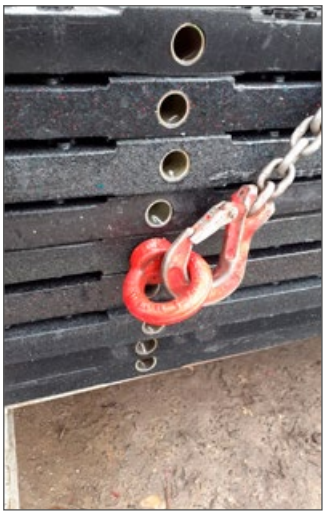
Method using lifting chains and hooks

1. Inserting Lifting Attachments

Insert lifting attachment into each of the four lifting points in the mat. For safety the four lifting points should always be used.
Ensure that the lifting chain is rated for the weight of the mat including any factor of safety.

2. Examples of Other Lifting Attachment Options

Note: Lifting chains, hooks and eye bolts should be rated for the weight of the mat (360kg) allowing for any required factor of safety. Equipment must comply with relevant international standards.



3. Mat Lifting

Carefully lift the mat to swing into position on the ground.

4. Mat Positioning

Place the mat adjacent to mats already positioned on the ground. No ground preparation is usually needed.
Mats can be aligned to form single / double roadways, working pads or turning areas as needed (see Appendix 2).
Note – when installing working pad areas it will be necessary to release the lifting hooks nearest the already installed mats before using attached chain / hooks or pry bars to move the mat into its final position before connection.

5. Preparing for Connection

As each mat is placed on the ground it should be connected to the adjacent mat. Mats should never be used unless properly fastened – this helps prevent hazards and damage that could result from unconnected mats as they flex upwards when vehicles pass over.
Important – a gap of 10mm should be left between mats before connection. This will allow for adjustment as mats expand when temperatures increase.

6. Connection

Where mats are installed on reasonably level ground the rigid steel connector straps should be used. Each strap is fastened using 2 x M16 hex head or dome head bolts.
On uneven ground it may be necessary to use the weight of a vehicle to align adjacent mats for connection.
Important –maximum torque of 20Nm to tighten the bolt should not be exceeded.

Removing I**sotrack H** Mats

The Isotrack H mats mats should be removed in the reverse sequence to that used for installation.

1. Unfasten and remove the M16 bolts to remove the connector straps and to release adjacent mats. Bolts and connectors should be stored for the next project.
2. Mats are lifted for stacking on pallets (to be strapped) or onto trucks before being securely strapped for safe transport to the next project or back to depot.
3. A forklift or other suitable equipment is used to lift the mats for stacking / storage (refer Section 4.2).
4. As always the correct equipment should be used to ensure safe lifting and handling of the mats.

6.5 Using Geotextiles

On sites that are particularly wet or muddy it is recommended that a geotextile material is first rolled out over the ground before mat installation commences. Geotextile can provide a cost-effective barrier between the mats and the ground preventing water and mud being pumped up onto the mat surface. In turn this reduces the need for cleaning mat surfaces during (and after) the project and provides a safer working surface.

7. OPERATING GUIDANCE AND LIMITATIONS

7.1 Safe Speed

Isotrack H mats have been designed for the safe movement of worksite vehicles, equipment and personnel. Although the mats will provide temporary roadway access it is important to understand that the mats will not behave in the same way as a permanent road surface. It is therefore necessary to observe strict control over the speed of vehicles using the mat system. Subject to project site safety requirements it is recommended that vehicles and equipment **must not exceed 10 kph.**

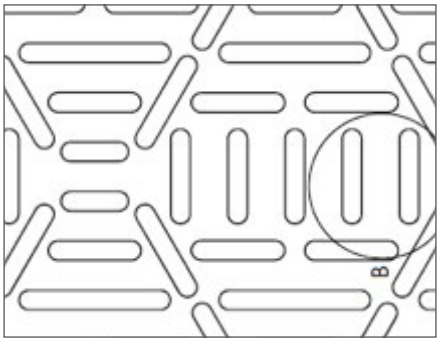
7.2 Bridging

The mats will flex to ground contours and small gaps beneath the mat will not affect performance. However, Isotrack H mats are not designed for bridging or spanning trenches (refer Section 5). The mats are intended to be used so that they are mostly in contact with a sub-grade or underlying surface so sufficient ground support must be in place before the mats are installed. In areas where mats are to span significant ground depressions some minor re-grading of the ground surface prior to installation is required – a more uniform surface will facilitate speed of installation and improve transfer of vehicle load across the mats.

7.3 Steel Tracked Vehicles and Equipment

As already noted in Section 4.5 steel tracks and equipment can damage the thermoplastic material used to make the Isotrack H mat (this applies to any plastic / composite mats). However, steel tracked vehicles can be used with care.

1. Ensure that the mats are installed with the ‘steel tracks’ surface uppermost:



2. Plan ahead for the movement of steel tracked vehicles – it is better to have the vehicles moving forwards and backwards in straight lines within the area that they need to work.
3. If turning areas are required, then turning movements should be undertaken at very slow speed.
4. Inspect for significant damage as soon as the steel tracks are used. Minor surface damage is to be expected. However, should gouge marks into the mat core be evident then vehicle speed and/or mode of operation should be addressed to prevent any further significant damage.

   Note: Connector plates, straps and bolts can be exposed to increased damage risk from steel tracks when the mats are installed as pads. It is recommended that dome headed bolts are used to reduce this risk. However, additional care is required – driving at slow speed and no abrupt turning when traversing the pad area.

Pin Connection

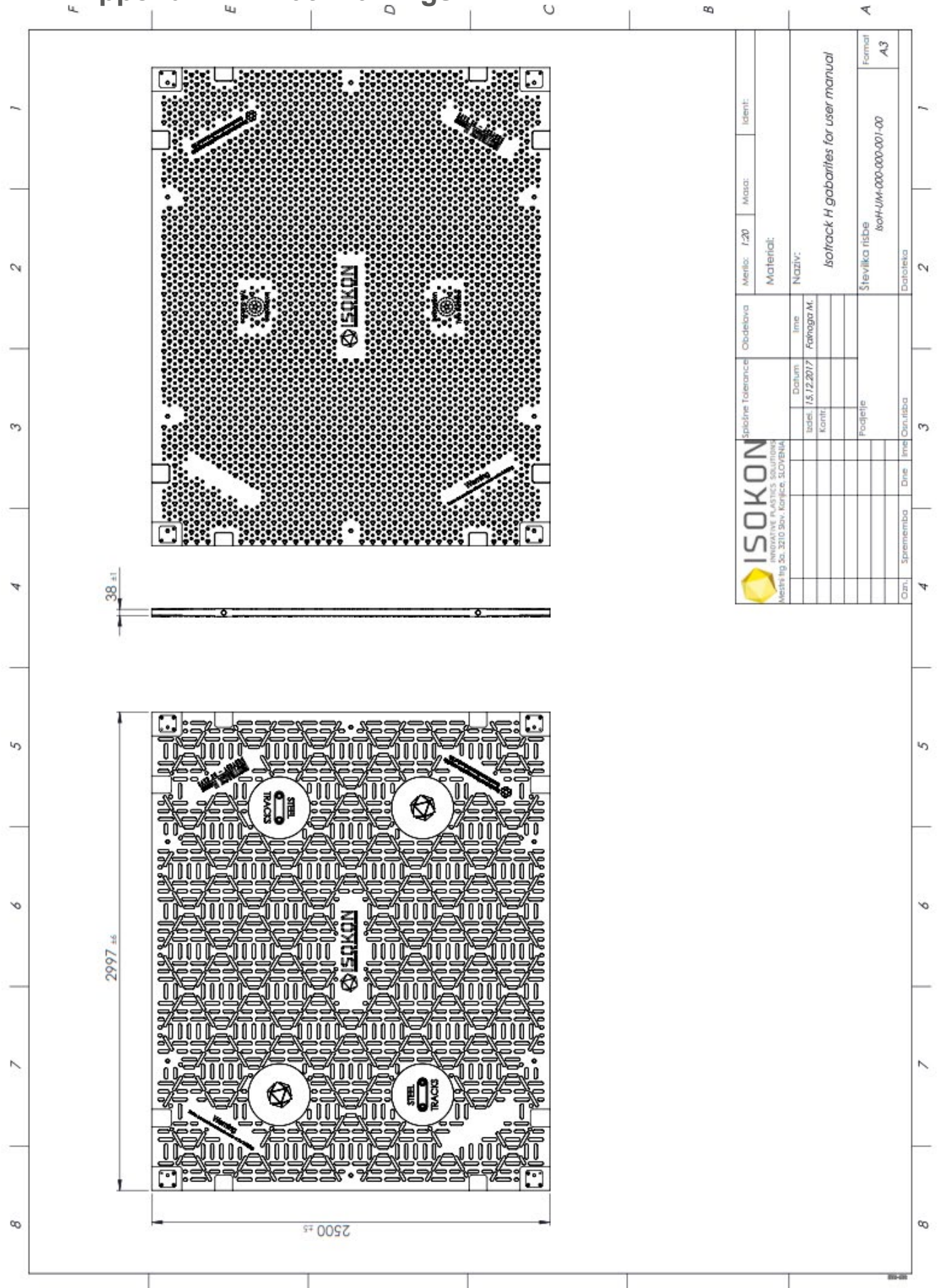
To fix the position of mats that are installed on sloping ground, or are at risk of excessive movement due to the use of heavy vehicles and equipment, straight or U-pins can be used.

Important Warning

Before using pins:

* Check with site manager / supervisor about the location and depth of any services or utilities on site.
* Check all relevant utility plans.
* Look for external signs of the presence of services.
* Do not use pins above existing services.

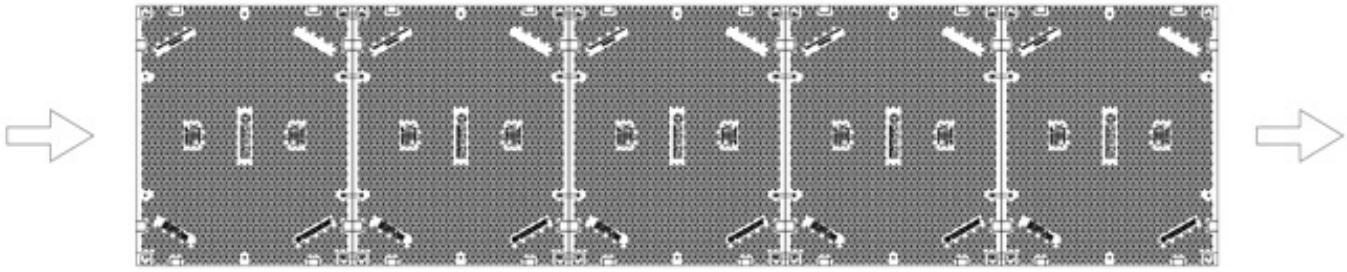
Appendix 1 – Mat Drawings



Appendix 2 – Mat Configuration Options

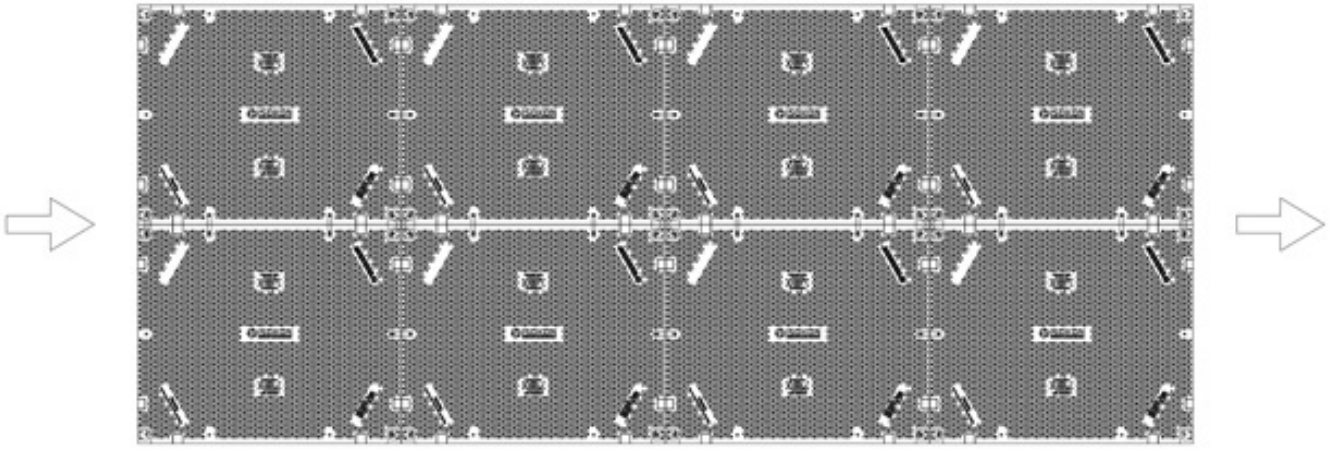
Single Track

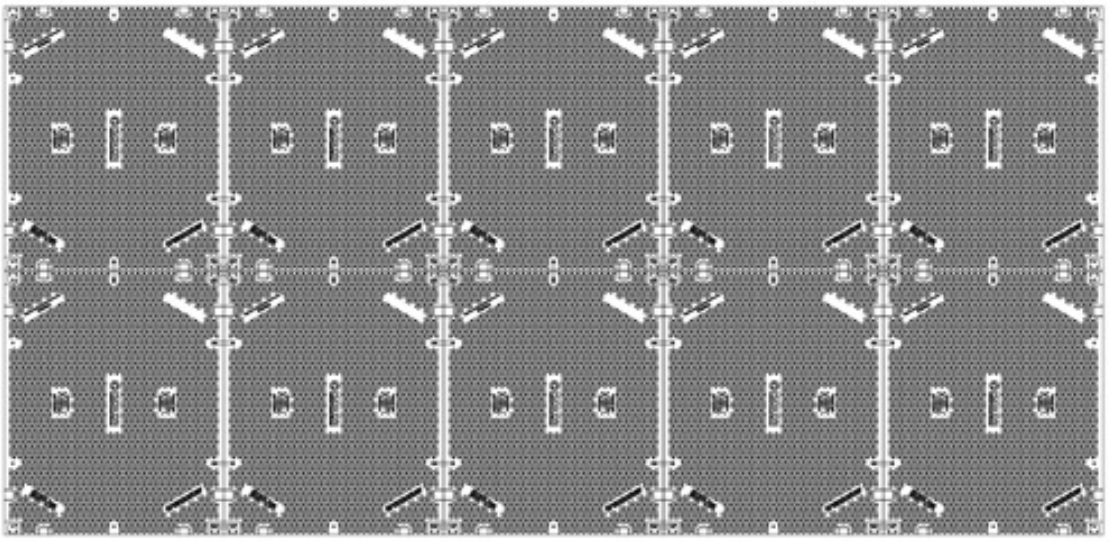
The single track (3m running road width option) is formed by installing the mats long side to long side in the direction of the road. A minimum of two corner connectors is required.



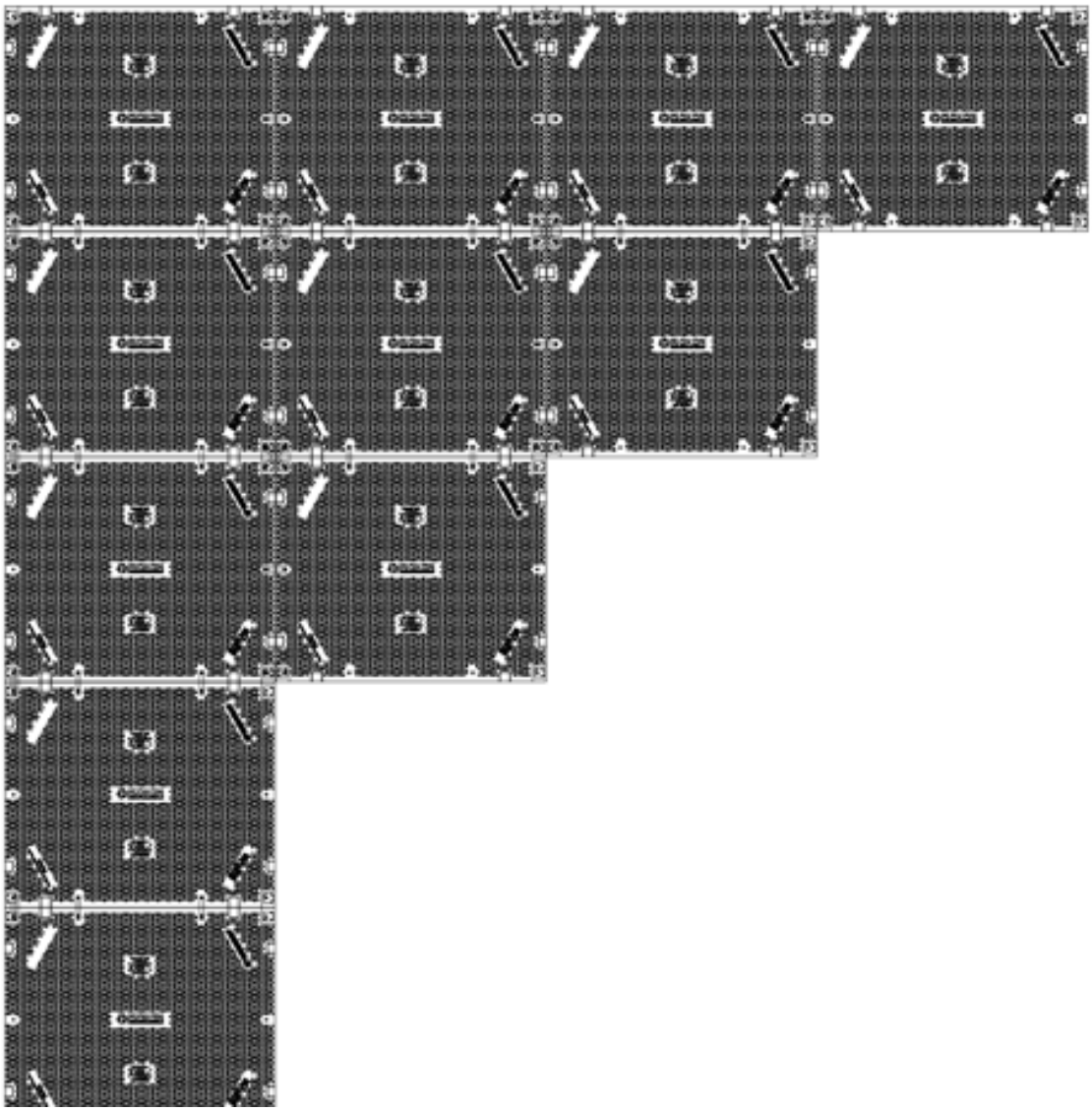
Working Pad and Turning Areas

Isotrack H mats can be installed and fastened together to cover large surface areas to be used as work sites or pads. Once you have calculated the required area Installation commences and follows the sequence as shown below. Begin by laying one mat at the outside corner of the proposed site, nearest to the access road. The mat should be aligned with the edge of the site so that the pad, when constructed, covers the required area. By laying the mats from the corner outward, you will be able to work on the matted surface and have more room to manoeuver.

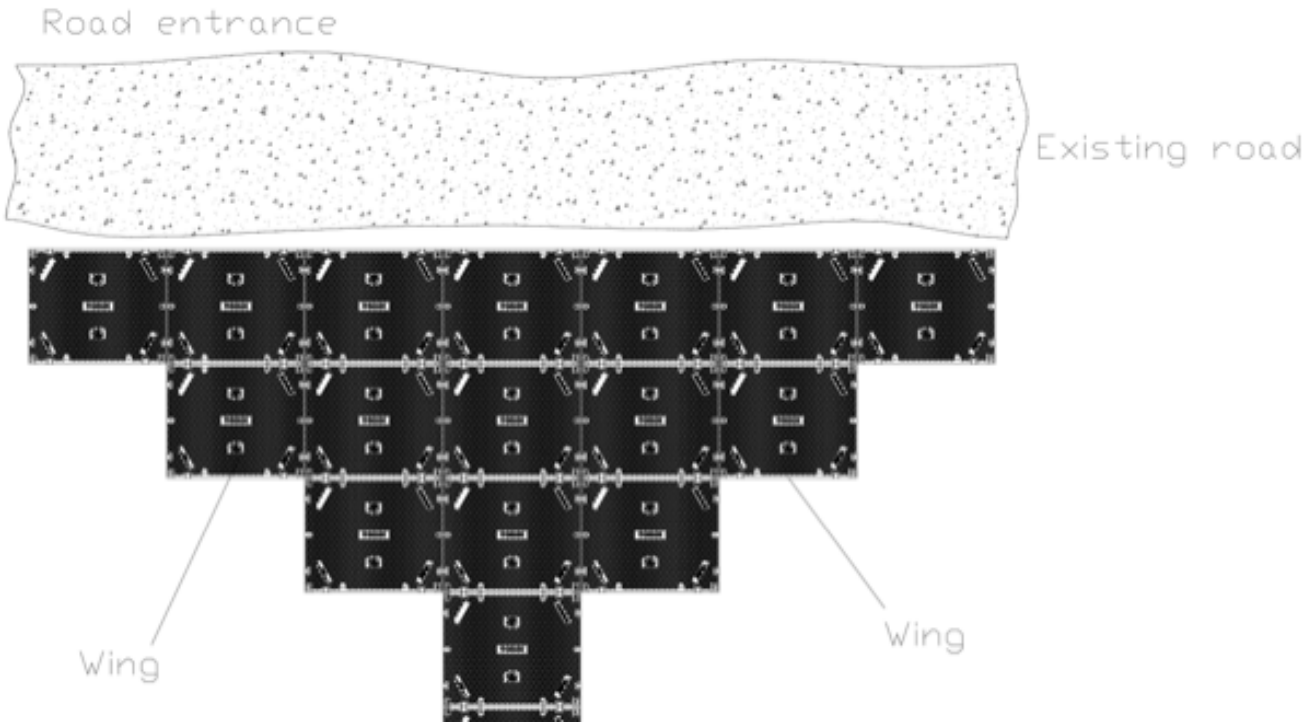




Turning corners for short and long vehicles can be formed using the mats. Longer vehicles require a wider turning area and knowledge of the path footprint (refer examples below) can be used to inform the mat configuration required.



When a Isotrack H road meets an existing road it may be necessary to install ‘wings’ to allow for the turning radius of vehicles.



Appendix 3 – tMAT

tMAT – Key Features

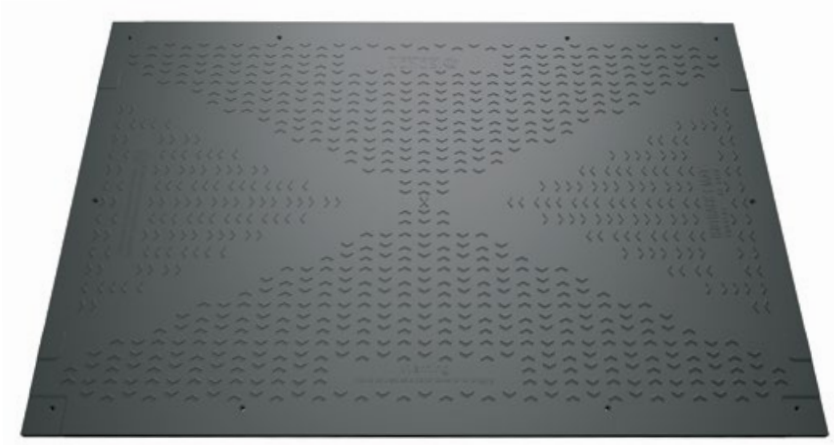
The tMAT has oveall dimensions and weight different as Isotrack H.
Oveall area: 3000 x 2000 mm
Height: Total 47,5mm, core 38mm
Weight: 235 kg

- tMAT has two different traction surfaces. One surface has higher nubs for vehicle traction. The second surface has lower profile nubs for use on pedestrian walkways, bicycles or wheelchairs might be used.

Traction Surface with lower nub profile

Traction surface with higher nub profile

Side with traction surface for vehicles



Side with traction surface for pedestrian walkways / bicycles / wheelchairs

Connection

tMAT uses the same steel connectors as used for Isotrack H. The Method of installation and connection is the same as described for Isotrack H.

MENU

ISOKON
INNOVATIVE PLASTICS SOLUTIONS

Isokon d.o.o.
Industrijska cesta 16
3210 SLOVENSKE KONJICE
SLOVENIJA

T: +386 (0)3 757 11 00
F: +386 (0)3 757 10 63
e-mail: isotrack@isokon.si
www.isotrack.eu
www.isokon.si

The information contained herein is based on current knowledge and does not guarantee properties or performance of IsoTrack H under all conditions. Refer to Isokon Standard Terms and Conditions.
The mat is made from material with high compressive strength but the maximum safe vehicle weight will depend on a number of factors including the load bearing capacity of the underlying ground conditions. Advice should be sought from competent project geotechnical engineers.